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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/603,510	06/25/2003	Gregory S. Derosier	5796-138US	3640

570 7590 09/20/2004

AKIN GUMP STRAUSS HAUER & FELD L.L.P.  
ONE COMMERCE SQUARE  
2005 MARKET STREET, SUITE 2200  
PHILADELPHIA, PA 19103-7013

EXAMINER

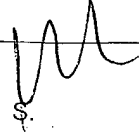
WALBERG, TERESA J

ART UNIT	PAPER NUMBER
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3742

DATE MAILED: 09/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/603,510	Applicant(s) DEROSIER, GREGORY S. 	
	Examiner Teresa J. Walberg	Art Unit 3742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

### DETAILED ACTION

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 6-10, 12, 13, 16, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Richter (5,927,393).

Richter discloses the claimed structure including (see col. 1, line 49-col. 2, line 26) a fin (12) for use in a heat exchanger (10) having coils including tube segments (14) extending through the fin (12), the fin (12) comprising a corrugated sheet of material having a plurality of major corrugations, which can be rounded (Fig. 4) or triangular (Fig. 1), a plurality of orifices adapted for insertion of the tube segments, a collar (32) perpendicular to the reference major plane and extending around each orifice, a generally flat area (34) around each collar, the major corrugations in a region adjacent to the generally flat areas having at least one of first angled walls extending from the peaks to the generally flat areas and second angled walls extending from the valleys to the generally flat areas (see Fig. 7), the number of major corrugations being about 8 to 24 per inch (8 is disclosed at col. 2, line 15) and the amplitude and width of the major corrugations having a relationship such that a ratio of the distance  $h$  to  $w$  is about 0.32 to about 0.7. See col. 2, lines 19-26.

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3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Richter (5,927,393) in view of Rye (4,668,443).

Richter, as discussed above, discloses the claimed structure with the exception of the corrugations having axes at an angle of about 75 degrees with respect to vertical.

Rye discloses positioning corrugations at an angle of about 75 degrees to vertical.

It would have been obvious in view of Rye to provide the fins of Richter at an angle of about 75 degrees to add more turbulence to the air flow.

5. Claims 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Richter (5,927,393) in view of Nash (5,111,876).

Richter, as discussed above, discloses the claimed structure with the exception of a channel which drains fluid from the fin.

Nash discloses providing a channel which drains fluid from the fin.

It would have been obvious in view of Nash to provide the fins of Richter with a fluid drainage channel to remove condensate from the air flow.

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6. Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Richter (5,927,393) in view of Gunter (3,397,741).

Richter, as discussed above, discloses the claimed structure with the exception of the cross sectional area of the flat area around the orifice.

Gunter discloses the relative sizes of the orifice and the flat space around it. See col. 4, lines 9-14..

It would have been obvious in view of Gunter to provide the fins of Richter with the claimed sizes of the flat area and the orifice for improved heat transfer.

7. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Richter (5,927,393) in view of Leonard et al (4,735,775).

Richter, as discussed above, discloses the claimed structure with the exception of the number of corrugations per inch.

Leonard et al disclose the heat transfer fins having the claimed size of corrugations. See col. 4, lines 9-14..

It would have been obvious in view of Leonard et al to provide the fins of Richter with the claimed corrugation sizes based on the desired air flow characteristics.

8. Claims 30, 31, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Richter (5,927,393) in view of Appelquist et al (5,950,716).

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Richter, as discussed above, discloses the claimed structure with the exception of the fins having bumps and dimples.

Appelquist et al disclose providing a heat transfer surface with bumps and dimples. See abstract.

It would have been obvious in view of Appelquist et al to provide the fins of Richter with bumps and dimples to increase the turbulence and thus the heat transfer.

9. Claims 5 and 23-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Richter (5,927,393) in view of Mautsch (1,920,313).

Richter, as discussed above, discloses the claimed structure with the exception of the major corrugations being trapezoidal and the corrugations including minor corrugations.

Mautsch discloses providing a heat transfer surface with trapezoidal corrugations (Fig. 3) and minor corrugations (see Figs. 8-10).

It would have been obvious in view of Mautsch to provide the fins of Richter with trapezoidal corrugations and minor corrugations to increase the turbulence and thus the heat transfer. While Mautsch appears to show all of the minor corrugations being in phase, it would have been obvious to have various portions of the minor corrugation be in or out of phase with other portions, based on the airflow pattern desired at that specific location.

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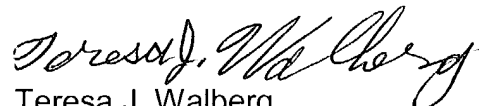
10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Uyama, Meier, Onishi et al, Seshimo, Bradley, and Sacks are cited to show fin structure.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Teresa J. Walberg whose telephone number is 703-308-1327. The examiner can normally be reached on M-F 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on 703-305-5766. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Teresa J. Walberg  
Primary Examiner  
Art Unit 3742

tjw